

Name: _____

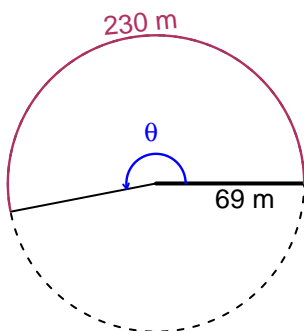
Date: _____

Trig Final (TEST v638)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

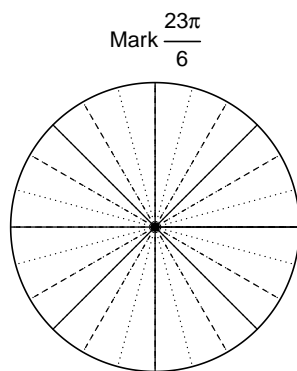
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 69 meters. The arc length is 230 meters. What is the angle measure in radians?

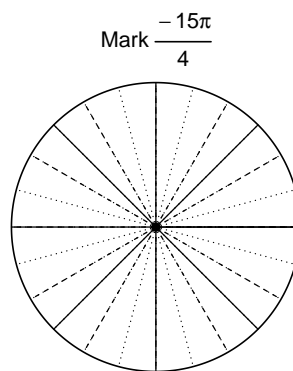


Question 2

Consider angles $\frac{23\pi}{6}$ and $\frac{-15\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{23\pi}{6}\right)$ and $\cos\left(\frac{-15\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\sin(23\pi/6)$



Find $\cos(-15\pi/4)$

Question 3

If $\sin(\theta) = \frac{80}{89}$, and θ is in quadrant II, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with a frequency of 2.67 Hz, a midline at $y = 5.61$ meters, and an amplitude of 4.43 meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).